International Journal of Advanced Multidisciplinary Research
ISSN: 2393-8870 (Online), ISSN: 3139-3918 (Print)
www.ijarm.com
(A Peer Reviewed, Referred, Indexed and Open Access Journal)
DOI: 10.22192/ijamr Volume 13, Issue 6-2026

Review Article

DOI: http://dx.doi.org/10.22192/ijamr.2026.13.06.008

Epidemiology of Poultry Coccidiosis and its Economic Impact on in Poultry Production Sector: A Review

Tamirat Demissie Walelign
Sidama Regional Veterinary Laboratory Center, Hawassa, Ethiopia.

Keywords

Bloody Diarrhea, Economic Importance, Emeria, Intensive, Poultry Coccidiosis, Young Chicken.

Abstract

This review paper was done with the objectives of reviewing poultry coccidiosis and highlighting its economic impact on poultry production sector. Coccidiosis is the most important protozoan disease of poultry which is caused by the intracellular parasite of genus Emeria and resulting in significant economic losses worldwide. This disease is endemic in most of the tropical and subtropical regions of the world and transmitted through feco-oral route. It commonly affects young chickens and chickens managed under intensive system. Poultry coccidiosis is characterized by bloody diarrhea, ruffled feathers, dehydration and paleness of comb clinically and thickening of intestine, hemorrhage and necrotic enteritis at the specific site of intestine of chickens during necropsy depending on the species of *Emeria* involved. Diagnosis is based on clinical signs, coprology and post mortem examination routinely though various biochemical and molecular methods have also been used in recent years. Different anticoccidial and sulfa drugs are available for treatment and prevention although drug resistance becomes a major problem recently. It can be prevented and controlled by good managemental practices, prophylaxis, vaccination and immunization of chickens, selection of genetically resistant chickens and use of natural feed additives. Coccidiosis causes huge economic losses mainly due to production losses and costs of treatment or prevention. It is concluded that poultry coccidiosis is still the most important protozoan disease of poultry and have a great economic impact worldwide; and good managemental practices including good hygiene and bio security measures should be applied for the control and prevention of the disease.

Introduction

Ethiopia is one of the countries with the largest number of livestock in Africa and livestock production plays a major role in the development of Ethiopia's agriculture. Ethiopian livestock population is estimated to be 53.38 million cattle, 25.50 million sheep, 22.78 million goats, 6.21 million donkey, 2.08 million horse, 1.10 million camels, 0.39 million mules and 49.28 million poultry [1].

Poultry constitutes an important component of agricultural and household economy in the developing world and play important role to enable the landless poor farmers move out of poverty [2]. In Africa, village poultry contributes over 70% of poultry products and 20% of animal protein intake. In East Africa, over 80% of human population lives in rural areas and over 75% of these households keep indigenous chickens [3]. Ethiopia has huge population of chickens estimated to be 56.53 million with indigenous, hybrid and exotic breeds of chickens representing 94.31%, 3.21% and 2.49%, respectively [1].

Coccidiosis is caused by the intracellular protozoa parasite of Eimeria species in the genus Eimeria family Eimeridae order Eucoccidiorida and phylum Apicomplexa [4]. Eimeria colonize and infect the intestinal tract of different animals and birds and infection with this parasite normally occurs through ingestion of feed or water contaminated with sporulatedoocysts [5, 6]. About nine species of *Eimeria*have been recognized in domesticated chickens, of which *Eimeria brunette (E. brunette), Eimeria maxima (E. maxima), Eimeria necatrix (E. necatrix), Eimeria tenella* (E. tenella) are the most pathogenic; *Eimeria acervulina (E. acervulina), Eimeria mitis (E. mitis), Eimeria mivati* (E. mivati) are the less pathogenic and *Eimeria praecox(E. praecox) and Eimeria hagani(E. hagani)*are the lesser pathogenic [7].

Infections caused by coccidian parasites have had a major economic impact on the commercial broiler industry in the past several decades. It is endemic in most of the tropical and subtropical regions where ecological and management conditions favor an all year-round development and propagation of the causal agent [8]. Poultry coccidiosis is one of the diseases causing significant poultry losses in Ethiopia [9]. Coccidiosis resulting from the pathogenic *Eimeria* species is usually characterized by dysentery, enteritis, diarrhea, which may be bloody with certain *Eimeria* species, emaciation, lower feed conversion rate, delayed sexual maturity, drooping wings, poor growth and low production with attendant high mortality and morbidity rates [10].

The most common and pathogenic species that affects the poultry industry globally is the (*E. tenella)*with 100% morbidity and a high mortality due to extensive damage of the digestive tracts of chickens [11,12]. Mortality rates are usually high in young chicks, because most of the *Eimeria* species affects birds between the age of 3 and 18 weeks [13]. The occurrence of clinical Coccidiosisis directly related to the number of oocysts ingested by poultry at one time, the pathogenicity of the Eimeria species, the age of the infected chicken and the management system [6].

The most frequent symptoms is at the beginning yellow diarrhea then become depressed, have ruffled feathers, the wings droop and tend to huddle together [14]. High incidence of Coccidiosisis usually observed in poultry managed under intensive management system like deep litter due to increased likelihood of high oocysts accumulation in the litters [15]. Furthermore, higher stocking densities have been linked with increased incidence of Coccidiosisdue to a higher rate of infection and transmission of the coccidian oocysts in dense flocks from one poultry house to another [16].

For the control of Coccidiosis in chickens and turkeys, a number of preventive medications have been approved for use worldwide, but reduced sensitivity and resistance are increasingly important as no new anticoccidial compounds are known to be under development [17]. The

traditional control of Coccidiosis mainly relies on chemoprophylaxis, which appeared to be effective in the last decades. However, the increased occurrence of resistance against routine anti-coccidial drugs has left the poultry industry with a renewed challenge for Coccidiosis prevention and control and propelled the search for alternative strategies among which vaccination is of major importance [18]. Therefore, the objective of this paper is to review on poultry Coccidiosis and its economic impacts on poultry production sector.

Poultry Coccidiosis

Etiology

Avian Coccidiosisis an enteric parasitic disease caused by multiple species of the protozoan parasite of the genus *Eimeria*. Coccidiosis is the commonest and most important disease of poultry resulting in great economic losses worldwide [19].

Among the infectious diseases of poultry, Cocccidiosisis the major parasitic disease. Poultry Coccidiosisis an economically important disease in chicken caused by the intracellular protozoa parasite of *Eimeria* species in the genus *Eimeria* family Eimeridae order Eucoccidiorida and phylum [4]. Seven species of *Eimeria* (*E.acervulina, E.brunetti, E.maxima, E.mitis, E.necatrix, E.praecox and E.tenella*) are recognized as infecting chickens as it detailed in Table 1. Although coccidiosis is a disease known for many years, it is still considered as the most economical important parasitic condition affecting poultry production worldwide.

Table 1.*Eimeria* species with their predilection site in intestine of poultry

No	*Eimeria* Species	Predilection Site
1	*E.tenella*	Caecum
2	*E.acervulina*	Upper small intestine
3	*E.necatrix*	Middle and entire small intestine
4	*E.maxima*	Middle and lower small intestine
5	*E.hagani*	Anterior gut
6	*E.mivati*	Upper small intestine and rectum
7	*E.praecox*	Anterior gut
8	*E.mitis*	Anterior gut
9	*E.brunette*	Lower intestine

Source: (Foreyt[20])

Morphology

Majority of Eimeriaoocysts have ovoid shape. Other characteristics that is useful in species identification includes: zone of intestine parasitized, nature of macroscopic lesions, minimum sporulation time, minimum prepatent period, schizonts size and area in which it develops, location of the parasite within the epithelial cells and cross-immunity trails [21].

Lifecycle

The life cycle of all *Eimeria*species involves two or more generation of an asexual development known as shizogony, followed by a sexual phase formed by gametogony which results in the formation of oocyst [22]. The infective stage, sporulatedoocyst, is ingested and the action of mechanical and chemical factors in the gut (bile salt and trypsin) leads to the release of sporocysts and then sporozoites in the duodenal lumen and this stage is described in Figure 1. The sporozoites invade the mucosa sometimes passing down the whole length of the alimentary tract before doing so. Then follow phases of intracellular growth and asexual multiplication with periodic release of merozoites entering in to the sexual phase of the life cycle known as

gametogenesis [23]. These merozoites invade cells and develop in to either macro- gametes or micro- gametes. The former gives rise to a single macrogamete whereas the male gametocyte matures and ruptures, releasing seven large number of minute biflagellate micro-gametes. The micro-gametocyte grows to form a micro-gamete. A thickened wall forms around the macro-gamete, forming a zygote when the macro gamete is fertilized by microgamete. This stage is the young or immature oocyst [24, 25].

Epidemiology

The disease is endemic in most of the tropical and subtropical regions where ecological and management conditions favour an all-year round development and propagation of the causal agent [8]. The occurrence of different *Eimeria* species combinations and the intensity of infection vary considerably, both locally and globally [5]. High incidence of Coccidiosisis usually observed in poultry managed under intensive management system like deep litter due to increased likelihood of high oocysts accumulation in the litters [13]. In Ethiopia, poultry Coccidiosis caused by *E.acervulina, E.necatrix, E.maxima and E.tenella* is endemic in all parts of the country and affects mainly young growing birds [9].

Agent related risk factors of Coccidial infection in poultry: The occurrence of poultry Coccidiosisis dependent on both the species of *Eimeria* and the size of the infecting dose of oocysts. Due to the short prepatent period of the parasite and its high biotic potential, the number of oocysts in the litter rises rapidly [26]. Poultry coccidia have high capacity to reproduce within the host; this leads to high level of the parasite within the susceptible host and subsequently high level of contamination of the environment [27].

Host related risk factors: Coccidiosis is usually a disease of young birds, but birds can be infected at any time, if never exposed before. Coccidia populations take time to build dangerous levels, therefore, outbreaks usually occur when birds are between 3 and 8 weeks of age [25]. High animal density cramped on a small space, age of the bird at the time of the first infection and number of passages of the infection as well as on ability of the bird to develop proper specific immune response [28].

Environmental and management related risk factors: Management of poultry houses plays a momentous function in the spread of Coccidiosisbecause coccidialoocysts are omnipresent and are easily spread in the poultry house environment. Further, owing to their high reproduction potential, it is very complex to keep chickens coccidia free, especially under current intensive rearing [29]. Prevalence varied by management and did not vary by flock size while bad management, such as wet litter that encourages oocyst sporulation, contaminated drinkers and feeders, bad ventilation, and high stocking density, can worsen the clinical signs [12, 30].

Pathogenesis

Infection by coccidia in sufficient number to produce clinical manifestations of disease is called Coccidiosis[31]. Though nine species of *Eimeria* have been identified as causative agents of poultry coccidiosis, only seven of them have been reported to be pathogenic [32]. *E.tenella* and *E.necatrix* are the most pathogenic species. *E.acervulina, E.maxima* and *E.mivati* are common and slightly too moderately pathogenic while *E.brunetti* is uncommon but pathogenic when it does occur. *E. praecox* and *E.hagani* are relatively non-pathogenic species [33]. Oocysts passed in the feces require suitable environmental conditions to sporu late. Moist, temperate, or cool conditions favor sporulation, whereas high tem peratures and dryness impede it Radostits *et al.*[34]. Coccidiosis outbreaks are commonly classified according to the areas of the digestive tract for which the particular species of coccidia seem to have a special affinity. The protozoan parasite of the genus *Eimeria* multiplies in the intestinal tract and causes tissue damage, resulting in the interruption of feeding, digestive processes, nutrient absorption, dehydration, blood loss, loss of skin pigmentation and increased susceptibility to other disease pathogens [35].

Clinical Signs

Avian Coccidiosis, caused by parasites of the genus *Eimeria*, produces anorexia and reduced weight gain and feed conversion in infected chicks [36]. *E.tenella* causes moderate to severe cecal lesions, sometimes death. The birds become depressed, have ruffled feathers, the wings droop, have diarrhea and tend to huddle. Food and water consumption usually decreases and may become emaciated and dehydrated. Laying hens will experience a reduction in rate of egg production. Cecal Coccidiosis may produce bloody droppings and anemia [37]. Clinical signs are associated with tissue destruction from the release of the merozoites and mature oocysts from the mucosal surface during the last generations of merogony and throughout gametogony. In severe infections, much of the mucosal epithelium is sloughed off and nutrient absorption is compromised [38].

Diagnosis

Diagnosis of Coccidiosisin chicken is best accomplished by postmortem examination of representative number of birds. Diagnosis by fecal examination may lead to quite erroneous results [33]. In some instances the major pathology is produced before oocysts are shed in the feces *E. tenella*and, conversely, the presence of large number of oocysts may not necessarily indicate a serious pathogenic condition. Thus, with *E.acervulina,* which has a high biotic potential, comparatively larger numbers of oocysts are shed than, for example, with *E.necatrix*. Furthermore, the accurate identification of the oocysts of various poultry coccidia is not easy [34]. In recent years, various biochemical and molecular methods have also been [18]. As indicated, next to the fact *Eimeria*are very effective parasites, one of the main reasons Coccidiosisis still a major problem, is the difficult diagnosis. The classical parasitological methods of diagnosis are labor intensive and therefore costly. Oocyst per gram (OPG) counts in faeces or litters have a poor relation with the impact of the parasite on the performance of a flock. Identification of different species based on morphology of oocysts is very challenging and requires expertise [17].

Diagnosis of clinical disease caused by *E.tenella* is quite easy and action (therapy on the short term, change of preventive means on the long term) can be swift. These facts make its impact on the productivity of the broiler industry is relatively limited compared to the other species, although many broiler farmers associate coccidiosis only with caecalcoccidiosis. This is a good example of perception not being in accordance with the facts. *E.acervulina* and *E. maxima*, both much more prevalent, are less perceived to be related with clinical coccidiosis in the field. *E. acervulina* is causing white lesions in duodenum and in heavier infections also more caudal, interfering even with the ability for *E. maxima* to develop [39].

Necropsy Findings

The type and locations of lesions in the gut indicates the species of *Eimeria*. *E.acervulina* affects the upper parts of the small intestines, you may see small red spots and white bands on it; *E. maxima* affect the entire small intestine; the intestine looks watery and in later stages have blood and mucus. The intestine may look thickened and ballooned with red pinpoint lesions. *E.tenella* affects the blind sacks of the gut. The intestine may be filled with blood and pus and turn in to a solid core [25]. Histopathologically, the wall of the gut is thickened indicating retention of fluid (edema). There may be blood in the lumen of the gut indicating blood loss (hemorrhage), or merely retention of an excessive amount of blood in the tissue (hyperemia) there is also infiltration with various body reactions and the development of immune response [40].

Treatment, Control and Prevention

The effective use of anticoccidial feed additives over the past 50 years has played a major role in the growth of the poultry industry and has allowed the increased availability of high quality, affordable poultry products to the consumer. There are basically two means of prevention of Coccidiosis: chemoprophylaxis and vaccination. Chemoprophylaxis using so-called anticoccidial products (ACP) or anticoccidials in the ration is

by far the most popular [41]. Coccidiosis is by far more easily prevented than treated; Drugs have been very important in controlling Coccidiosis but the emergency of coccidial drug resistance has affected the use of fullness of the drugs. The possibility that drugs may not always be relied up on to control Coccidiosis has led to an interest in other means of control [42]. Apart from the use of drugs, control is now based on hygiene, vaccine and genetics. But genetics is a theoretical strategy not in practical use [26]. Prevention of avian Coccidiosisis based on a combination of good management and the use of anticoccidial compounds in the feed or water. Litter should always be kept dry and special attention should be given to litter near water fonts or feeding troughs [43, 44]. The prophylactic drugs used for prevention of Coccidiosis are coccidiosistats. An effective coccidiostat should inhibit the schizogonic stage and allow immunity to develop. Prophylactic use is performed because most of the damage occurs before signs become apparent and because drugs cannot completely stop an outbreak [14].

Status of Poultry Coccidiosis in Ethiopia

The prevalence of poultry Coccidiosis has been reported in different part of Ethiopia in different years Prevalence of Coccidiosis was reported by researcher; Gebremeskel and Tesfaye[45], Oljira,[46],Alemayehu *et al.*[47] and Fayissa and Chalchisa[48] as listed as, 20.57%, 28.2%, 25.5% and 39.6% respectively. The variation of this all prevalence of Coccidiosis may be due to epidemiology of study time, breed and management system differences and possibility of drug resistance.

Economic Importance of Poultry Coccidiosis

Poultry Coccidiosisis recognised as the parasitic disease with the greatest economic impact on poultry industries worldwide [6]. The impact of disease on animal agriculture is typically assessed in quantitative terms. In poultry industry, the negative inputs including lost revenues, costs of vaccination/ prevention, eradication, decontamination and restocking are the main impacts of the disease in poultry agricultural sector [49].

The most problematic disease in the poultry industry worldwide is coccidiosis, mainly due to subclinical forms of diseases that interfere with body weight and feed conversion. It is estimated that 95.6-98.1% the economic losses in the commercial broiler industry are caused by Coccidiosis[50].

This protozoan disease is responsible for great worldwide economic losses to the poultry industry with an estimated world annual loss of more than 3 billion USD [51]. These estimates include the costs of prophylactic in feed medication for broilers and broiler breeders, alternative treatments if medication fails and losses due to mortality, morbidity, impaired growth rate, temporary reduction of egg production in layers and poor feed conversion of chickens that survive outbreaks [52].

In Ethiopia Coccidiosisis identified as a cause of direct and indirect losses in all farms. Losses occurred in the form of mortalities, coccidiostats cost, reduced weight gains, reduced market value of affected birds, culling, delayed off take and reduce egg production. Previous studies conducted in the country showed that Coccidiosis contributes to 8.4% and 11.86% losses in profit in large and small-scale farms, respectively [53, 54]. In Ethiopia, average total losses were estimated as 898.8 and 5,301.8 Ethiopian Birr per farm in small- and large-scale farms, respectively [53].

Conclusion and Recommendations

In general, poultry Coccidiosisis still important and most prevalent protozoan parasitic disease of chickens that affects poultry production seriously and results huge annual economic loss worldwide including Ethiopia in spite of advances are made in control and prevention of the disease. It is caused by host specific, site specific and non-cross protective protozoan parasites of genus *Emeria* and affects the intestinal portion of the alimentary tract of chickens. This enteric parasitic

disease is more common in chickens managed under intensive production system; and affects more frequently young growing chickens and chickens which never exposed before. Even though various control measures have been attempted against the disease, prophylactic use of anticoccidial drugs was widely used control approach which has resulting a problem of drug resistance in recent time. Eventually, it is concluded that agent, host, environmental and management risk factors for the occurrence of the disease and problem of drug resistance should be taken into account in designing the control and preventive program against this disease.

Hence, based on the above conclusion, the following recommendations are forwarded:

- For the control and prevention of poultry coccidiosis proper hygienic and bio security measures should be implemented, and prophylactic anticoccidial drugs should be provided with appropriate time and recommended dose.
- Cage housing system should be practiced in intensive production system instead of deep litter housing system to reduce the risk of accumulation of coccidian oocytes and occurrence of the disease, different age groups of chickens should not be reared in the same house.
- Recommended stocking density should be practiced, and all-in and all-out system of production should be practiced in intensive farms.
- To control this economically important parasitic disease of poultry, further studies need to be undertaken to come up with sustainable and cost-effective prevention and control methods.

References

1. CSA (Central Statistical Authority), 2017. Agricultural sample survey report on livestock and livestock characteristics. Addis Ababa, Ethiopia.
2. Gueye, E. F., 2005. Village egg and fowl meat production in Africa. World's Poultry Scientific Journal, 54, 73-86.
3. Matawork, M., 2016. Review on Exotic Chicken Status, Production Performance and Constraints in Ethiopia. Journal of Biology, Agriculture and Healthcare, 6, 103-112.
4. Taylor, M.A., B.Coop and R.L.Wall, 2007. Veterinary Parasitology (3rd Edn). Oxford, UK, Blackwell Publishing 475-83.
5. Haug, A., A.G.Gjevre, P.Thebo, J.G.Mattsson and M.Kaldhusdal, 2008.Coccidial infections in commercial broilers: epidemiological aspects and comparison of Eimeria species identification by morphometric and polymerase chain reaction techniques. Avian pathol 37: 161-70.
6. Allen, P.C. and R.H.Fetterer, 2002. Recent advances in biology and immunobiology of Eimeria species and in diagnosis and control of infection with these coccidian parasites of poultry. Clinmicrobiol Rev 15: 58-65.
7. Jadhav, B.N., S.V.Nikam, S.N.Bhamre and E.L.Jaid, 2011. Study of Eimerianecatrix in broiler chicken from Aurangabad District of Maharashtra state India. Int Multi Res J 1.
8. Obasi,OL.,OJ, Ifut and E.A.Offiong, 2006. An outbreak of caecalcoccidiosis in a broiler flock post Newcastle disease vaccination. J Anim Vet Adv 5: 1239-41.
9. Safari, M., H.Kinung, T.Getachew, W.Hafez andK.Moges, 2004.Assessement of Economic impact caused by poultry coccidiosis in small and large scale poultry farm in Debrezeit, Ethiopia. Int J PoultSci 3: 715-25.
10. Awais, M.M., M.Akhtar, Z.Iqbal, F. Muhammad and M.I.Anwar, 2012. Seasonal prevalence of coccidiosis in industrial broiler chickens in Faisalabad, Punjab, Pakistan. Trop AnimHealth Prod 44: 323-8.
11. Ayaz, M.M., M.Akhtar, C.S.Hayat, M.A.Hafeez and A.Haq, 2003. Prevalence of coccidiosis in broiler chickens in Faisalabad, Pakistan. Pak Vet J 23: 51-2.

12. Hadipour, M.M., A.Olyaie, M.Naderi, F. Azad andO.Nekouie, 2011. Prevalence of Eimeria species in scavenging native chickens of Shiraz, Iran. Afr JMicrobiol Res 5: 3296-9.
13. Dakpogan, H.B. and S.Salifou, 2013.Coccidiosis prevalence and intensity in litter based high stocking density layer rearing system of Benin. J Anim Plant Sci 17: 2522-6.
14. Kahn, C.M., 2005. The Merck Veterinary Manual (9th Edn). White house station, NJ, USA, 2201-6.
15. Nnadi, P.A. and S.O.George, 2010. A cross-sectional survey on parasites of chickens in selected villages in the subhumid zones of South-Eastern Nigeria. J Parasitol Res.
16. Lunden, A., P.Thebo, S.Gunnarsson, P.Hooshmand-Rad and R.Tauson, 2000.Eimeria infections in litter-based, high stocking density systems for loose-housed laying hens in Sweden. Br PoultSci 41: 440-7.
17. De Gussem, M., 2007.Coccidiosis in poultry: review on diagnosis, control, prevention and interaction with overall gut health. In Proc16th EurSympPoultNutr 253-61.
18. Morris, G.M. and R.B. Gasser, 2006. Biotechnological advances in the diagnosis of avian coccidiosis and the analysis of genetic variation in Eimeria. BiotechnolAdv 24: 590-603.
19. Latif, A.A., S.Fazal, F.Manzoor, A.Maqbool and S.Asghar, 2016. A Comparative Study on Prevalence of Coccidian Parasites in Broiler Chicken (Gallus gallusdomesticus), Japanese Quail (Coturnixcoturnix japonica) and Wild Pigeon (Columba livia). Pak J Zool 48: 295-7.
20. Foreyt, W.J., 2001. Veterinary parasitology reference manual (5th Edn). Iowa state Univ Press, Ames, USA.
21. Reid, W.M., 1978.Coccidiosis. Diseases of Poultry (7th Edn). Iowa State University Press, Ames, Iowa, USA, 784-805.
22. Kaufmann, J., 1999. Parasitic Infections of Domestic Animals. Germany, Birkhauser, 341-2.
23. Jones, C.T., D.R.Hunt andW.N. King, 1996. Veterinary Pathology (6th Edn) USA Lippincott Williams Wilkings 552.
24. Conway, D.P. and M.E.McKenzie, 2007. Poultry coccidiosis: diagnostic and testing procedures. J Vet Sci 5: 22-35.
25. Fanatico, A., 2006. Parasite management for natural and organic poultry Coccidiosis. ATTRA Natl Sustainable AgricInfServ 1-12.
26. Jordan, F., M.Pattison, D.Alexander and T.Faragher, 2002. Parasitic diseases. In: Poultry Disease (5th Edn) Hong Kong, WB Saunders, 405-20.
27. Urquhart, G.M., J.Armour, J.L.Dunkan, A.M.Dunn and F.W. Jennings, 1987. Vet Parasitol. Longman Group UK Ltd, UK, 345.
28. Hofstad, M.S., 1984. Diseases of Poultry (8th Edn). Iowa State Univ Press, Ames, USA, 692-717.
29. Adhikari, A., R.Gupta and G.R.Pant, 2008. Prevalence and identification of coccidian parasite (Eimeriaspp) in layer chicken of Ratnanagar Municipality, Chitwan district, Nepal. J Nat HistMus 23: 45-50.
30. Al-Quraishy, S., A.S.Abdel-Baki and M.A.Dkhil, 2009.Eimeriatenella infection among broiler chicks Gallus domesticus in Riyadh city, Saudi Arabia. J King Saud UnivSci 21: 191-3.
31. Charlton, B.R., 2006.Coccidiosis. In: Avian disease manual (5th Edn) India: International book distributing company in association with American association of avian pathologist, USA, 153-6.
32. Kahn, C.M., 2008. The Merck Veterinary Manual (9th Edn). White house station, NJ, USA, Merck and CO, INC 2201-6.
33. Soulsby, E.J.L., 1982.Helminths, Arthropods and Protozoan's of Domesticated Animals (7th Edn) London: BailliereTindall, 167-9.

34. Radostits, O.M., C. Gay, K.W.Hinchcliff and P.D.Constable, 2007. A textbook of the diseases of cattle, sheep, goats, pigs and horses. Veterinary Medicine (10th Edn). Bailliere, Tindall, London, UK, 76-1580.
35. McDougald, L.R. and S.H.Fitz-Coy, 2008.Protozoal infection, In YM Saif (12th Edn). Dis Poult.
36. Safari, M., 2001. Studies on prevalence and economic impact of poultry coccidiosis in different production systems in DebreZeit and Addis Ababa, Ethiopia. Doctoral dissertation, MSc thesis, FVM, AAU, Ethiopia.
37. Whitmarsh,S.h., 1997. Protozoan Poultry Diseases. PoultSci Home Page, College AgricSci Mississippi State Univ.
38. Yun, C.H., H.S.Lillehoj and E.P.Lillehoj, 2000. Intestinal immune responses to coccidiosis. Dev Comp Immunol 24: 303-24.
39. Mathis G.F. and C. Broussard, 2006. Increased level of Eimeria sensitivity to diclazuril after using a live coccidial vaccine. Avian Dis 50: 321-4.
40. Marquardt, C.W., S.R.Demaree and B.R.Grieve, 2000. Parasitology and vector biology (2nd Edn). San Diego, London, Boston, New York, Tokyo, Tornto, 152.
41. Chapman, H.D., 2005. Perspectives for the control of coccidiosis in poultry by chemotherapy and vaccination. In Proc IXth Int Coccidiosis Conf, Foz de Iguassu, Parana, Brazil. Apinco Found PoultSciTechnol Campinas, São Paulo, Brazil, 99-103.
42. Vegad, J.L., 2004. Poultry coccidiosis. In: Poultry Diseases, a guide for farmers and poultry professionals. Int Book Distributing Company 186-197.
43. Urquhart, M.G., J.Armour, L.J.Duncan and W.F.Dunn,Jennings, 1996. Veterinary Parasitology (2nd Edn) Scotland: Univ Glasgow 228-31.
44. Williams, R.B., 1999. A compartmentalised model for the estimation of the cost of coccidiosis to the world's chicken production industry. Int J Parasitol 29: 1209-29.
45. Gebremeskel, A.K. and E.Tesfaye, 2016. Prevalence of poultry coccidiosis in and around Yabello, southern Ethiopia. J Vet Med Anim Health 8: 244-7.
46. Oljira, D., A., Melaku and B.Bogale, 2012. Prevalence and risk factors of coccidiosis in poultry farms in and around Ambo Town, Western Ethiopia. Am-Eurasian J Sci Res 7: 146-9.
47. Alemayehu, T., A.Tekeselassie and S.A.Kassa, 2012. Prevalence study of poultry coccidiosis in small and large-scale farms in Addis Ababa, Ethiopia. J Crop Sci 1: 26-31.
48. Fayissa, B.D. and T.Chalchisa, 2016. Poultry coccidiosis: Prevalence and associated risk factors in extensive and intensive farming systems in Jimma Town, Jimma, Ethiopia. J Vet Med Anim Health 8: 223-7.
49. Thrusfield, M., 2005. Veterinary Epidemiology (3rd ed.) (pp. 230-234). UK: Blackwell science Ltd., A Blackwell publishing company.
50. Bera, A. K., D.Bhattacharya, D. Pan, A.Dhara, S. Kumar and S.K.Das, 2010. Evaluation of economic losses due to coccidiosis in poultry industry in India. Agricultural Economics Research, 23, 91-96.
51. Dkhil, M. A., 2013. Anti-coccidial, anthelmintic and antioxidant activities of pomegranate (Punica granatum) peel extract. Parasitology Research, 112(7), 2639-2646.
52. Asadi, I. H., I.Asadi, M. R.Youssefi and T.M.Abouhosseini, 2015. Growth performance parameters in chicken experimental coccidiosis treated with Diclazuril and Clopidol: The need for assessing new anticoccidial resources. Iranian Journal of Veterinary Medicine, 9(3), 189-194.
53. Kinunghi, S. M., G.Tilahun, H.Hafez, M.Woldemeskel, M.Kyule, M.Grainerand M.P.Baumann, 2004. Assessment of economic impact caused by poultry coccidiosis in small and large poultry farms in DebreZeit, Ethiopia. International Journal Poultry Science, 3(11), 715718.

54. Safari, M. H., T.Kinung, W.Getachew, K.Hafez and G.Mathios, 2004. Assessment of economic impact caused by poultry coccidiosis in small and large scale poultry farm in Debrezeit, Ethiopia. International Journal of poultry Science, 3, 715-725.

Access this Article in Online	
Quick Response Code	Website: www.ijarm.com
	Subject: Poultry Science
DOI:10.22192/ijamr.2026.13.06.008	

How to cite this article:
Tamirat Demissie Walelign. (2026). Epidemiology of Poultry Coccidiosis and its Economic Impact on in Poultry Production Sector: A Review. Int. J. Adv. Multidiscip. Res. 13(6): 91-100.
DOI: http://dx.doi.org/10.22192/ijamr.2026.13.06.008